CLAIMS

What is claimed is:

1. An apparatus for accessing a selected section of an intervertebral disc comprising:

a catheter having a lumen; and

a guide wire having a distal portion and a proximal portion, and configured to be positioned within and moved relative to the lumen of the catheter; wherein the guide wire is capable of navigating itself within an intradiscal section of the intervertebral disc to a selected section of the disc and the catheter is capable of being advanced relative to the guide wire such that the catheter follows a path of the guide wire within the intradiscal section of the disc adjacent the inner wall of the annulus of the disc to the selected section.

2. The apparatus according to claim 1, wherein the guide wire has (a) sufficient rigidity to be advanceable through a nucleus pulposus and an annulus fibrosus undera force applied longitudinally to the proximal end of the core wire, (b) insufficient penetration ability to be advanceable out through the annulus fibrosus under the applied force.

3. The apparatus according to claim 1, wherein the guide wire has sufficient flexibility in a direction of a disc place to be compliant with an inner wall of the annulus of the disc.

4. The apparatus according to claim 1, wherein the distal portion of the guide wire includes a spring coil.

5. The apparatus according to claim 4, wherein the spring coil contains a forming ribbon.

6. The apparatus according to claim 1, wherein the distal portion of the guide wire is tapered to a smaller diameter toward the distal end.

7. The apparatus according to claim 1, wherein the distal portion of the guide wire has a distal tip at the extremity of the distal portion of the guide.

8. The apparatus of claim 7, wherein the distal tip is configured to be non-piercing through an annulus fibrosus.

9. The apparatus according to claim 7, wherein the distal tip is a blunt tip.

10. The apparatus according to claim 7, wherein distal tip is a rolling ball tip.

11. The apparatus according to claim 7, wherein the distal tip includes a locking mechanism for securing the guide wire within the selected section of the disc.

12. The apparatus according to claim 11, wherein the locking mechanism is a retractable hook.

13. The apparatus according to claim 11, wherein the locking mechanism is a plurality of directional hooks.

14. The apparatus according to claim 11, wherein the guide wire is capable of cross-locking itself once the guide wire is advanced to the selected section of the disc.

15. The apparatus according to claim 1, wherein the proximal portion of the guide wire has an outer diameter between about 0.005-0.025 inches.

16. The apparatus according to claim 1, wherein the distal portion of the guide wire has an outer diameter between about 0.002-0.012 inches.

17. The apparatus according to claim 1, wherein the proximal portion of the guide wire is between about 10-15 inch long.

18. The apparatus according to claim 1, wherein the distal portion of the guide wire is between about 0.2-1.2 inch long.

19. The apparatus of claim 1, wherein the distal portion of the guide wire has a length at least one-half of a diameter of the nucleus pulposus.

20. The apparatus of claim 1, wherein the apparatus further comprises a dialator sheath configured to be slid over the guide wire for introducing the catheter onto the guide wire.

21. The apparatus of claim 1, wherein at least a portion of the guide wire is actively steerable.

22. The apparatus of claim 1, wherein at least a portion of guide wire is radiographically visible.

23. The apparatus of claim 1, wherein the distal portion of the guide wire has one or more flat sides.

24. The apparatus of claim 1, wherein the guide wire has a bending stiffness as measured in Taber stiffness units between about 2 - 400 units in a desired bending plane.

25. The apparatus of claim 1, wherein the guide wire has a bending stiffness as measured in Taber stiffness units between about 3 - 150 units in a desired bending plane.

26. The apparatus of claim 1, wherein the distal portion of the guide wire has a column strength between about 0.2 - 7 kg.

27. The apparatus of claim 1, wherein the distal portion of the guide wire has a column strength between about 0.7 -4 kg.

28. The apparatus of claim 1, wherein the catheter further includes a functional element for performing a function adjacent the selected section.

29. The apparatus of claim 28, wherein the function is selected from the group consisting of delivering energy, adding material and removing material.

30. The apparatus of claim 28, wherein the functional element comprise a thermal energy delivery device.

31. The apparatus of claim 30, wherein a thermal energy source is operably attached to the thermal energy delivery device through the catheter.

32. The apparatus of claim 30, wherein the thermal energy delivery device is selected from the group consisting of microwave probe, optical fiber, radio frequency electrode and ultrasound emitter.

33. The apparatus of claim 30, wherein the thermal energy delivery device is a resistive heater.

34. The apparatus of claim 30, wherein the catheter further comprises at least one sensor capable of monitoring temperature, power, voltage or a combination thereof and the input from the sensor controls energy supplied to the thermal energy device.

35. The apparatus of claim 28, wherein the functional element comprises an irrigation lumen extending from a proximal end of the catheter to the intradiscal section.

36. The apparatus of claim 28, wherein the functional element is capable of delivering a controlled amount of energy at or near the fissure such that no vaporization occurs at or near the fissure when energy is delivered by the functional element.

37. The apparatus of claim 28, wherein the functional element is capable of delivering a controlled amount of energy at or near the fissure such that no material other than water is removed at or near the fissure when energy is delivered by the functional element.

38. The apparatus of claim 28, wherein the functional element is capable of delivering a controlled amount of energy at or near the fissure such that no destructive lesion is formed on a disc at or near the fissure when energy is delivered by the functional element.

39. A method of treating an intervertebral disc, comprising:

causing a guide wire to navigate itself within an intradiscal section of the intervertebral disc adjacent an inner wall of an annulus of the disc to a selected section of the disc;

manipulating a catheter which has the guide wire positioned within a lumen of the catheter; and

advancing the catheter relative to the guide wire such that the catheter follows a path of the guide wire within the intradiscal section of the disc adjacent the inner wall of the annulus of the disc to the selected section.

40. The method of claim 39, wherein causing the guide wire to navigate itself is by applying a longitudinal force to the guide wire which is sufficient to advance the guide wire through the nucleus pulposus and around the inner wall of an annulus fibrosus, but which force is insufficient for guide wire to puncture the annulus fibrosus.

41. The method of claim 39, wherein the selected section of the disc is a posterior medial, posterior lateral, anterior lateral, or anterior medial section of the annulus fibrosus, or a combination thereof.

42. The method of claim 39, wherein the catheter includes a functional element for performing a function, the method further including performing a function adjacent the selected section.

43. The method of claim 42 wherein the function is selected from the group consisting of delivering energy, adding material and removing material.

44. The method of claim 42, further includes a step of using the function to treat annular fissure.

45. The method of claim 44, where the step of using the function to treat annular fissure includes a step of adding sufficient energy to the selected section of the disc.

46. The method of claim 44, wherein the step of adding sufficient energy comprises adding energy sufficient to shrink the collagen component of the annulus fibrosus around the fissure.

47. The method of claim 45, wherein the step of adding sufficient energy comprises adding sufficient energy to cauterize granulation tissue in the fissure to begin a healing process.

48. The method of claim 42, wherein the functional element is a lumen capable of delivering or aspirating material.

49. The method of claim 48, further comprising the additional step of placing a material in the disc.

50. The method of claim 49, wherein the material is selected from the group consisting of electrolyte solutions, contrast media, pharmaceutical agents, chemonucleolytic enzymes, hydrogel, osteoinductive substances, chondrocyte-inductive substances, sealants, collagen, fibrinogen and thrombin.

51. The method of claim 42, wherein the functional element is a heating element coupled with a temperature sensor.

52. The method of claim 42, wherein the functional element is selected from the group consisting of coil heating element, flat heating element and flex ribbon heating element.